SECONDARY KEY GROUP LAYOUT FOR KEYBOARD

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims a benefit of, and priority to, U.S. Patent Application Ser. No. 61/142,848, the contents of which is hereby incorporated by reference.

This application is related to U.S. patent application Ser. No. 12/022,834, filed Jan. 30, 2008, and titled "Hand-held Device", the contents of which are hereby incorporated by reference.

BACKGROUND

1. Field of Art

The disclosure generally relates to the field of computing device keyboards, and more particularly, grouping of keys corresponding to symbols.

2. Description of the Related Art

As computing device become more compact in size, the surface area for keyboards continues to decrease. Moreover, the number of keys to represent alphanumeric characters also continues to decrease. For example, keyboards corresponding to the English language characters conventionally were 101 keys and over time have reduced to 35 keys, 30 keys and 15 keys. Even with the smaller number of keys, such keyboards continue to maintain a configuration with Q-W-E-R-T-Y keys of a first of three letter rows (sometimes referred to as a 'QWERTY' keyboard.

A significant problem with a reduction in the number of keys is a corresponding reduction, or complete elimination, of secondary keys available for the user. Secondary keys include punctuation keys, numerical keys, and other symbol keys. Some configuration use software to display secondary keys on a screen for selection by a user when a pre-configured key on the keyboard is selected by that user. However, this configuration requires additional steps and coordination that is inconvenient for the user. Other attempted solutions include placing some secondary keys on the keyboard as separate keys or secondary keys activated through a type of "function" key. However, one problem with this approach is that the keys are not grouped in logical configurations.

BRIEF DESCRIPTION OF DRAWINGS

The disclosed embodiments have other advantages and features which will be more readily apparent from the detailed description, the appended claims, and the accompanying figures (or drawings). A brief introduction of the figures is below.

FIG. **1** illustrates one embodiment of a mobile computing device.

FIG. **2** illustrates one embodiment of an architecture of a mobile computing device.

FIGS. **3A** through **3C** illustrate one embodiment for a mobile computing device keyboard configuration and corresponding logic for the keyboard configuration.

FIG. **4** illustrates an alternate embodiment for a mobile computing device keyboard configuration with more gradual secondary key configuration.

DETAILED DESCRIPTION

The Figures (FIGS.) and the following description relate to preferred embodiments by way of illustration only. It should

be noted that from the following discussion, alternative embodiments of the structures and methods disclosed herein will be readily recognized as viable alternatives that may be employed without departing from the principles of what is claimed.

Reference will now be made in detail to several embodiments, examples of which are illustrated in the accompanying figures. It is noted that wherever practicable similar or like reference numbers may be used in the figures and may indicate similar or like functionality. The figures depict embodiments of the disclosed system (or method) for purposes of illustration only. One skilled in the art will readily recognize from the following description that alternative embodiments of the structures and methods illustrated herein may be employed without departing from the principles described herein.

General Overview

One embodiment of a disclosed system, method and computer readable storage medium that includes a configuration for layout of keys of a keyboard. In one embodiment, a keyboard configuration includes a set of keys having a first character value and second character value. The first character values may be grouped as a set of keys. In one embodiment, this grouping may be a set of keys that are configured in a keyboard layout. For example, the first character values may be within a keyboard having two or more keys in which a row of keys has consecutive characters corresponding to the first language character value of, for example, a language character value of 'Q', 'W', 'E', 'R', 'T', and/or 'Y'. Where these language character values are used, such configuration of keys is referred to as a "QWERTY" keyboard. The principles disclosed herein apply to other language character and configuration keyboard layouts as well, for example, DVORAK layout or QWERTZ layout or AZERTY, but for ease of discussion reference will be made to QWERTY.

Some of the keys of the keyboard also include a second character value. The second character values on the keys are grouped according to one of a plurality of groupings. Each grouping of the plurality of groupings comprising adjacent keys of the plurality of keys. The plurality of groupings is distributed across the keyboard, for example, in different zones. The groupings include, for example, mathematical operands, punctuations, and numerals. In one embodiment a symbol key, the symbol key configured to toggle between the first character value and the second character value of each of the plurality of keys having a first character value and a second character value.

As structured, the disclosed configuration logically groups commonly used character values and operands for ease of access and interaction. In addition, the configurations described also increases the number of functions available for interaction within a limited set of keys as further disclosed herein.

Example Mobile Computing Device

FIG. 1 illustrates one embodiment of a mobile computing device **110** with telephonic functionality, e.g., a mobile phone or a smartphone. The mobile computing device **110** is configured to host and execute a phone application for placing and receiving telephone calls. It is noted that for ease of understanding the principles disclosed herein are in an example context of a mobile computing device **110** with telephonic functionality operating in a mobile telecommunications network. However, the principles disclosed herein may be applied in other duplex (or multiplex) telephonic contexts such as devices with telephonic functionality con-